

issue fee, the Assistant Commissioner is authorized to deduct such fees required under 37 C.F.R. §§ 1.16 to 1.21 from Deposit Account No. 50-0786/2000.075200/DCD.

Reconsideration of the application in view of the following amendments and remarks is respectfully requested.

### **REMARKS**

#### **STATUS OF APPLICATION**

Claims 1, 2, 4-13, and 15-41 are pending in the present application. Claims 16-41 have been withdrawn from consideration as a result of a restriction requirement.

The Office has withdrawn the previous grounds of rejection, which were addressed in Applicants' Appeal Brief, and reopened prosecution on the merits.

#### **35 USC § 103 REJECTIONS**

**Claims 1, 2, 4, and 5 are patentable over USPAP 2002/0032499 in view of US 6,322,713 and US 6,503,376**

The rejection of claims 1, 2, 4, and 5 under 35 U.S.C. § 103(a), as being unpatentable over Wilson (U.S. Patent Application Publication 2002/0032499) in view of Choi (U.S. Patent 6,322,713) and Toyoda (U.S. Patent 6,503,376), is respectfully traversed for the reasons set forth hereinafter.

Claim 1 requires revising at least one parameter selected from the group consisting of a chemical concentration of an electroplating bath and an anode-cathode spacing of a deposition recipe if a measured thickness of a conductive layer is not within the predetermined tolerance.

As the Examiner well knows, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

A recent Federal Circuit case makes it crystal clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

The Office Action alleges that Choi “discloses that the thickness of a conductive layer may be controlled by the processing variables such as time, temperature, chemical concentration, and current density” (page 3, lines 15-17, of the present Office Action). Further, the Office alleges that Toyoda discloses that “the thickness of a conductive layer may be affected by the anode-cathode spacing” (page 3, lines 17-18, of the present Office Action). Each of these references will be discussed in turn.

Applicants respectfully traverse the Office’s allegation that Choi discloses that the thickness of a conductive layer may be controlled by the processing variables such as time, temperature, chemical concentration, and current density. Rather, Choi teaches that a sacrificial layer 12 may be applied to a substrate 11 (or to a metal coating 13) around a plurality of nanoconductors 10 by an electroplating process that can be controlled by the processing variables such as time, temperature, chemical concentration, and current density. The substrate 11 is for protecting a desired length 10A of the nanoconductors 10 while the remaining lengths 10B of the nanoconductors 10 are removed (column 3, line 60, through column 4, line 3, and FIG. 4 of Choi). The sacrificial layer 12 is described as being “desirably a material that can be relatively easily removed after the length equalization” (column 4, lines 5-6, of Choi).

Choi, however, does not disclose or suggest that the sacrificial layer is a conductive layer. Rather, Choi teaches that the sacrificial layer 12 is merely a protective layer for portions of the nanoconductors 10. Thus, it cannot disclose or suggest revising a chemical concentration of an

electroplating bath if a measured thickness of the conductive layer is not within the predetermined tolerance, as required by claim 1.

Applicants also respectfully traverse the Office's allegation that Toyoda teaches that the thickness of a conductive layer may be affected by the anode-cathode spacing. Rather, Toyoda discloses that "the volume of the soluble anode 2 decreases as the electroplating is performed, changing the distance between the soluble anode 2 and the cathode. This results in a change in the distribution of the thickness of the formed film or in the film quality" (column 1, lines 60-64, of Toyoda). Thus, according to Toyoda, the thickness of the film is not controlled by changing the anode-cathode spacing. Rather, the anode-cathode spacing naturally changes during the plating operation, which results in uneven thicknesses of the film or poor film quality. As Toyoda fails to disclose or suggest revising an anode-cathode spacing of a deposition recipe if a measured thickness of the conductive layer is not within the predetermined tolerance, it cannot render claim 1 obvious.

Even if Toyoda disclosed or suggested adjusting the anode-cathode spacing to affect the distribution of the thickness of the formed film or the film quality, which Applicants dispute, it would still not render claim 1 obvious. Toyoda teaches that varying the anode-cathode spacing (albeit as a result of the anode 2 decreasing in volume) is a problem to be avoided. In fact, it is one of the problems that Toyoda seeks to overcome. Toyoda, therefore, teaches away from revising the anode-cathode spacing, as required by claim 1.

Claims 2, 4, and 5 depend from claim 1. Accordingly, the remarks provided above concerning claim 1 apply equally to claims 2, 4, and 5.

It is therefore respectfully requested that the rejection of claims 1, 2, 4, and 5 under 35 U.S.C. § 103(a), as being unpatentable over Wilson in view of Choi and Toyoda, be reconsidered and withdrawn.

**Claims 6-13 and 15 are patentable over Wilson in view of Choi and Toyoda**

The rejection of claims 6-13 and 15 under 35 U.S.C. § 103(a), as being unpatentable over Wilson in view of Choi and Toyoda, is respectfully traversed for the reasons set forth hereinafter.

Claim 6 requires revising at least one parameter selected from the group consisting of a chemical concentration of an electroplating bath and an anode-cathode spacing of the deposition recipe based upon at least a calculated value representing the measured thickness of a conductive layer, if the calculated value is not within the predetermined tolerance. As discussed above concerning claim 1, Wilson in view of Choi and Toyoda fail disclose or suggest revising such a parameter. Accordingly, claim 6 is allowable over the cited references.

Claims 7-13 and 15 depend from claim 6. Accordingly, the remarks provided above concerning claim 6 apply equally to claims 7-13 and 15.

Therefore, it is respectfully requested that the rejection of claims 6-13 and 15 under 35 U.S.C. § 103(a), as being unpatentable over Wilson in view of Choi and Toyoda, be reconsidered and withdrawn.

**CONCLUSION**

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to contact Daren C. Davis at (817) 578-8616 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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